DO NOT ENTER: /JH/

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
Francois Roederer et al.	)	Group Art Unit: 1791
	)	
Serial No.: 10/582,401	)	Examiner: John M. Hoffmann
	)	
Filed: June 12, 2006	)	Confirmation No.: 2823
	)	
For: PRODUCTION OF CONTINUOUS FILAMENT MATS	)	Attorney Docket: 26221A

AMENDMENT AFTER FINAL REJECTION

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Honorable Sir:

Responsive to the Final Office Action mailed January 29, 2009, reconsideration of the above-mentioned application is respectfully requested in light of the following amendments and remarks.

If any fees are required pertaining to this response, particularly extension of time fees, which Applicants hereby request, if needed, all necessary fees should be charged to Deposit Account 50-0568.

In the Specification:

Replace paragraph beginning on line 34 at page 5 and continuing to line 12 at page 6 with the following paragraph:

The invention relates to a method of preparing a continuous strand mat, the strands coming from at least one roving thrown onto a conveyer belt, in which method:

- at least one roving package supported on a spindle is paid out via the outside, the rate of said pay-out being imposed by a motor ~~acting directly on~~ unwinding the roving package such that the roving is unwound from the roving package so that the linear speed of the paid-out roving is constant; then

- the roving passes through a nozzle, by passing through an entry and then an exit of the nozzle, said nozzle being also provided with a transverse injection of at least one fluid, said fluid being mainly ~~directed~~ introduced in a direction toward the exit of the nozzle, inducing a tension toward the bottom of the roving, said fluid also dividing the roving; and then

- the strands forming the roving are thrown in an oscillating movement onto said conveyor belt.

Replace paragraph beginning on line 19 at page 6 with the following paragraph:

The invention also relates to an installation for manufacturing mats formed from continuous strands coming from roving packages and thrown onto a conveyor belt, which comprises:

- at least one roving package supported on a spindle;
- a means of paying out the roving coming from the package;
- at least one nozzle through which the roving passes, by passing via an inlet and then an outlet of the nozzle, said nozzle being also provided with a transverse injection of at least one fluid, said fluid being ~~directed~~ introduced in a direction mainly toward the exit of the nozzle, so as to induce a tension in the roving toward the exit; and
- a means of throwing the strands forming the roving onto said conveyor belt.

Replace the paragraph beginning on line 3 at page 8 with the following paragraph:

The injection of at least one fluid into the nozzle is transverse, between the entry and the exit. The fluid leaves the exit more easily than the entry, as the nozzle creates, with respect to the fluid, a larger head loss at the entry than at the exit. Such a difference in head loss may for example be produced by a difference in opening diameter. In general, the fluid may be compressed air. The pressure of the fluid may for example range from 2 to 10 bar and more generally from 3 to 8 bar. As shown in Fig. 1, the ~~The~~ fluid is mainly introduced in a direction ~~directed~~ toward the exit, which means that more than half of the flux entering leaves via the exit (generally directed downward). The fluid injected into the nozzle has two functions:

- to divide the roving into its constituent strands;
- to induce a slight downward tension in the roving, with the consequence that the fluid leaves more easily in the downward direction that the upward direction.

Replace paragraph beginning on line 32 at page 8 and continuing to line 11 at page 9 with the following paragraph:

In addition to the splaying fluid, the nozzle may also be fed with water. This water serves firstly to make the roving heavier, in order to influence its path that it follows when thrown onto the conveyor belt (by increasing the drop angle of the splayed roving). The water may also contribute, as fluid, to generating tension in the roving. The weight of the roving when vertical also contributes to tensioning the roving. In addition to the splaying fluid, a dilute aqueous solution or dispersion containing an active substance may also be fed into the nozzle in order to impregnate the roving, so as to give the mat particular properties such as the formation of a thin surface film, or better compatibility with the material to be reinforced. Thus, according to the invention, the speed of the roving is imposed by the motor that ~~acts directly on~~

unwinds the package such that the roving is unwound from the roving package. The action of the splaying fluid in the nozzle and the weight of the roving do not modify the speed of the roving, but only its tension.

Replace paragraph beginning on line 1 at page 11 and continuing to line 9 at page 12 with the following paragraph:

The roving package 1 is ~~actuated directly~~ unwound by a motor 19, for example via a cogged belt 20, such that the roving is unwound from the roving package. The package 1 pays out a roving 2 that is not yet divided. The roving passes through the ring (or eyelet) 3, the function of which is to correctly position the roving opposite the pulley 4. The roving passes over this pulley 4 so as to be sent downward. A light ray passes transversely, just beside the roving, at the point 5, thereby making it possible to detect any increase in diameter of the roving (cut-off of the light ray is detected by a photoelectric cell that forces the roving to stop being paid out and actuates the strand cutter 7). The roving then passes through an eyelet 6, the opening of which is equal to that of the nozzle 8. Thus, any strand too thick to pass through the nozzle would be stopped by the eyelet 6. Beneath the eyelet 6 is a strand cutter 7. This strand cutter may be actuated manually at any time or by an automatic mechanism following the detection of too large a diameter at the point 5. A light ray coupled to a photoelectric cell detects the presence or otherwise of the roving at the point 9. The roving then passes through the nozzle 8 via its entry 10, and leaves via its exit 11. The nozzle includes an air injection 12 and a water injection 13. The air injection forces the strand to be divided into its base strands in the nozzle and the roving leaves the nozzle divided into individual strands. The nozzle 8 is fixed substantially at its entry 10 to a plate 14, which is itself connected to a motor 15. The motor gives the nozzle an oscillatory movement from one side to the other, in the manner of the balance wheel of a clock, which makes the roving falling downward cover the width of the belt 16 that is running beneath it. The splayed roving is received on said belt as a continuous strand mat. The plate 14 has another nozzle 17 capable of taking over from the first

nozzle when the latter is no longer delivering (the package is empty or there is a problem requiring it to be stopped). It should be imagined that to an entire installation (not shown in order to simplify the figure) equivalent to that just described in the case of the nozzle 8 (package, eyelets, pulley, etc.) corresponds to this nozzle 17. To give an illustration, the linear (constant) speed of the roving 2 of the order of 8 m/s and, depending on the outside diameter of the package 1, the angular speed of the roving leaving the package 1 varies from 500 rpm to 2000 rpm.

AMENDMENTS TO THE CLAIMS

1-11. (Cancelled)

12. (Currently Amended) A method of preparing a continuous strand mat, the strands coming from at least one roving thrown onto a conveyor belt, the method comprising:

paying-out at least one roving package supported on a spindle via the outside, a rate of the pay-out being imposed solely by a motor ~~driving~~ unwinding the roving package such that the roving is ~~pushed~~ unwound from the roving package and wherein the linear speed of the paid-out roving is constant; then

passing the roving through a nozzle, wherein the roving passes through an entry and then an exit of the nozzle, the nozzle also provided with a transverse injection of at least one fluid, the at least one fluid being mainly introduced in a direction toward the exit of the nozzle, inducing a tension toward a bottom of the roving, the at least one fluid also dividing the roving; and then

throwing the strands forming the roving in an oscillatory movement onto the conveyor belt.

13. (Previously Presented) The method as claimed in claim 12, wherein a speed of the roving paid out is measured by an encoder coupled to a pulley driven by the roving package.

14. (Previously Presented) The method as claimed in claim 12, wherein the nozzle presents the at least one fluid with a higher head loss at the entry than at the exit.

15. (Previously Presented) The method as claimed in claim 12, wherein the roving includes 2 to 50 strands.

16. (Previously Presented) The method as claimed in claim 12, wherein the fluid has a pressure of between 2 and 10 bar.

17. (Previously Presented) The method as claimed in claim 12, wherein the nozzle is also fed with water or with an aqueous solution or dispersion.

18. (Previously Presented) The method as claimed in claim 12, wherein the tension in the roving between the nozzle and the package is between 50 and 200 grams.

19. (Withdrawn) An installation for manufacturing mats formed from continuous strands coming from roving packages and thrown onto a conveyor belt, comprising:

at least one roving package supported on a spindle;

means for paying out the roving coming from the package;

at least one nozzle through which the roving passes, by passing via an inlet and then an outlet of the nozzle, the nozzle also provided with a transverse injection of at least one fluid, the at least one fluid being directed mainly toward the exit of the nozzle, so as to induce a tension in the roving toward the exit; and

means for throwing the strands forming the roving onto the conveyor belt.

20. (Withdrawn) The installation as claimed in claim 19, wherein a pulley is driven by the paid-out roving, and an encoder is coupled to the pulley measuring the speed of the roving.

21. (Withdrawn) The installation as claimed in claim 19, wherein the nozzle is supported by the means for throwing.

22. (Withdrawn) The installation as claimed in claim 19, including at least two roving packages, each associated with a nozzle.

23. (New) A method of preparing a continuous strand mat, the strands coming from at least one roving thrown onto a conveyor belt, the method comprising:

paying-out at least one roving package supported on a spindle via the outside, a rate of the pay-out being imposed solely by a motor unwinding the roving package such that the roving is unwound from the roving package and wherein the linear speed of the paid-out roving is constant; then

passing the roving through a nozzle, wherein the roving passes through an entry and then an exit of the nozzle, the nozzle also provided with a transverse injection of at least one fluid, the at least one fluid being mainly introduced in a direction toward the exit of the nozzle, the at least one fluid inducing a tension toward a bottom of the roving, the at least one fluid also dividing the roving; and

throwing the strands forming the roving in an oscillatory movement onto the conveyor belt;

wherein the only tension on the roving unwinding from the roving package is caused by the at least one fluid.

REMARKS

This is in response to the outstanding Final Office Action dated January 29, 2009. Applicants have previously withdrawn claims 19-22 without prejudice or disclaimer. Claim 12 has been amended. Applicants have added new claim 23. Support for the amendment to Claim 12 and new Claim 23 can be found in the specification at least at page 6, lines 4-10 and 27-33; at page 8, lines 19-30 and at page 9, lines 13-17.

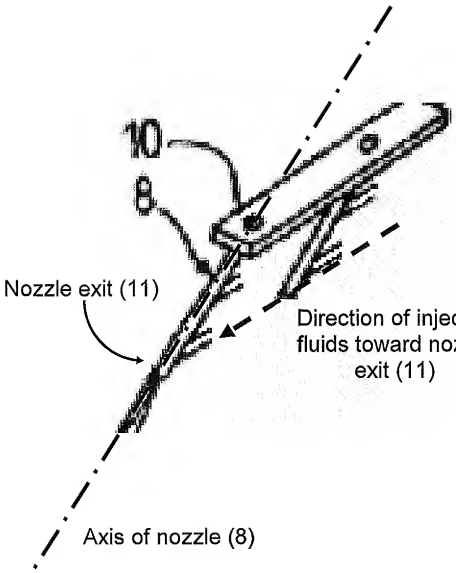
Applicants respectfully request withdrawal of the outstanding rejections and allowance of the claims. Claims 12-23 are pending.

Response to Amendment of Specification

1. In the outstanding Office Action, the Examiner indicated the amendment to the Specification filed 12/09/2008 has not been entered. The Examiner indicated the Specification as filed does not have paragraph numbering. Applicants have revised the amendments to the Specification to include the line and page numbers in lieu of the paragraph numbers.

2. In the outstanding Office Action, the Examiner indicated the language "pushed" is new matter. Applicants have revised the amendments to the Specification to delete the word "pushed".

3. In the outstanding Office Action, the Examiner indicated the language "the fluid being introduced in a direction toward the exit of the nozzle" is new matter. This rejection is respectfully traversed. Applicants' Specification is replete with references with the language "fluid being mainly directed toward the exit of the nozzle" including the paragraph beginning on line 4 at page 6, the paragraph beginning on line 27 at page 6, and the paragraph beginning on line 3 at page 8. Additionally, the concept of the fluid being mainly directed toward the exit of the nozzle is clearly shown in Applicants' Figure 1, an enlarged portion of which is shown below.



Response to Rejection of Claims Under U.S.C. §112, First Paragraph

In the outstanding Office Action, the Examiner rejected claims 12-18 under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in

the Specification. Specifically, the Examiner could not find support for the claim limitation that the roving is pushed from the roving package and that fluid is introduced in a direction toward the exit of the nozzle.

1. As to the limitation "pushed", Applicants have amended independent claim 12 to delete the word "pushed".

2. As to the limitation "fluid is introduced in a direction toward the exit of the nozzle", Applicants respectfully traverse the rejection for the same reasons as discussed above.

Rejection of Claims 12 and 14-17 Under 35 U.S.C. §103(a)

In the outstanding Office Action, claim 12 and 14-17 were rejected 35 U.S.C. 103(a) as being unpatentable over Droux (WO 02/084005) in view of Picone (U.S. No. 4,345,927).

Independent claim 12 has been amended to provide a method of preparing a continuous strand mat. The method includes paying-out a roving package such that the rate of the pay-out of the roving package is imposed solely by a motor unwinding the roving package. As the roving is payed-out, the roving passes through a nozzle provided with an injection of at least one fluid. The fluid is mainly introduced in a direction toward the exit of the nozzle.

In the outstanding Office Action, the Examiner asserts the Droux reference discloses the method and all of the limitations of Applicants' independent claim 12 with the exception of the fluid directed toward the exit. However, the Droux reference does not disclose the method claimed in Applicants' amended independent claim 12. Specifically, the Droux reference fails to disclose that the rate of the pay-out of the roving package is imposed solely by a motor unwinding the roving package. Rather, the Droux reference discloses a combination of a motor (3) and a pulling means (7) positioned downstream from the roving package (1). The pulling means (7) is configured to pull the fiber bundle (column 3, line 30 and column 4, lines 39-40) in cooperation with the motor (3) such that the means (7) guarantees a constant

production output (column 5, lines 40-41). There is simply no disclosure in the Droux reference of a method that includes paying-out a roving package such that the rate of the pay-out of the roving package is imposed solely by a motor unwinding the roving package as claimed in Applicants' amended independent claim 12.

To overcome the deficiencies of the Droux reference, the Examiner relies on the Picone reference. The Examiner asserts the Picone reference teaches a nozzle where the fluid is directed toward the nozzle exit. However, the Picone reference does not disclose the method claimed in Applicants' amended independent claim 12. Specifically, the Picone reference fails to disclose the structure of a nozzle provided with an injection of at least one fluid, wherein the fluid is mainly introduced in a direction toward the exit of the nozzle. Rather, as clearly shown in Fig. 4 of the Picone reference, a fluid enters the accelerating means (34) from the conduit (62) in a direction substantially transverse to the direction of travel of the strands (12) and also transverse to an axis defined by the entrance opening (63) and exit opening (64) of the accelerating means (7). One skilled in the art would appreciate that the fluid disclosed in the Picone reference is not mainly introduced in a direction toward the exit of the nozzle as claimed in Applicants' amended independent claim 12. One skilled in the art would also appreciate that the accelerating means (7) of the Picone reference would require further modifications in order to introduce the fluid in a direction toward the exit of the nozzle. Accordingly, the nozzle disclosed in the Picone reference does not disclose the method of introducing a fluid in a direction toward the exit of the nozzle as claimed in Applicants' amended independent claim 12.

Even a combination of the Droux and Picone references, as suggested by the Examiner, does not encompass the combination of limitations of the method as claimed in Applicants' amended independent claim 12. First, a combination of the Droux and Picone references does not show a method that includes paying-out a roving package such that the rate of the pay-out of the roving package is imposed solely by a motor unwinding the roving package. Rather, a combination of the Droux and Picone references provides the method of producing constant production mats

having the pulling means for paying-out the roving package as provided by the Droux reference and the nozzle having fluid introduced in a transverse direction as provided by the Picone reference.

Second, the combination of the Droux and Picone references does not show a method that includes a method of introducing a fluid in a direction toward the exit of the nozzle. Rather, as discussed above, the combination of the Droux and Picone references provides the method of producing constant production mats having the pulling means for paying-out the roving package as provided by the Droux reference and the nozzle having fluid introduced in a transverse direction as provided by the Picone reference.

It is well established that all claim limitations must be considered in judging the patentability of a claim against the prior art. As set forth in the MPEP, at least at §2143.03, in order to establish prima facie obviousness of a claimed invention, all of the claimed limitations must be considered against the prior art, citing In Re Wilson, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). In this regard, Applicants' amended independent claim 12 is non-obvious under 35 U.S.C. §103(a) in view of the Droux and Picone references. Therefore the rejection of amended independent claim 12 is not applicable and the claim is patentable as presented.

Dependent claims 13-18 depend on amended independent claim 12 and for at least this reason, are also patentable.

New Claim

New independent claim 23 has been added to further define the invention. New claim 23 provides a method of preparing a continuous strand mat. The method includes paying-out a roving package such that the rate of the pay-out of the roving package is imposed solely by a motor unwinding the roving package. As the roving is payed-out, the roving passes through a nozzle provided with an injection of at least one fluid. The fluid is mainly introduced in a direction toward the exit of the nozzle. The at least one fluid inducing a tension toward a bottom of the roving, wherein the

only tension on the roving unwinding from the roving package is caused by the at least one fluid.

Conclusion

In view of the above amendments and remarks, Applicants have shown that the claims are in proper form for allowance, and the invention, as defined in the claims, is not taught or disclosed by the applied references. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections of record, and allowance of all claims.

Respectfully submitted,

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